



October 10, 2019

Mr. Brian Mitchell
EPA Project Manager
U.S. Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

Subject: **Quality Assurance Project Plan for Preliminary Assessment and Site Investigation
Downtown Wells Site and Former Electrolux Site, Jefferson, Iowa
U.S. EPA Region 7 START 5, Contract No. 68HE0719D0001
Task Order No. 19F0086.003
Task Monitor: Brian Mitchell, EPA Project Manager**

Dear Mr. Mitchell:

Tetra Tech, Inc. is submitting the attached Quality Assurance Project Plan for sampling activities at the Downtown Wells Site and Former Electrolux Site in Jefferson, Iowa. If you have any questions or comments, please contact the START Project Manager at (816) 412-1770.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Ryan Slanczka'.

Ryan Slanczka
START Project Manager

A handwritten signature in blue ink, appearing to read 'Ted Faile'.

Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Randy Schademann, START Project Officer (cover letter only)
Cody McLarty, Alternate START Project Officer (cover letter only)

QUALITY ASSURANCE PROJECT PLAN
PRELIMINARY ASSESSMENT AND SITE INVESTIGATION
AT THE DOWNTOWN WELLS SITE AND FORMER ELECTROLUX SITE
JEFFERSON, IOWA

Superfund Technical Assessment and Response Team (START) 5
Contract No. 68HE0719D0001, Task Order 19F0086.003

Prepared For:

U.S. Environmental Protection Agency
Region 7
Superfund Division
11201 Renner Blvd.
Lenexa, Kansas 66219

October 10, 2019

Prepared By:

Tetra Tech, Inc.
415 Oak Street
Kansas City, Missouri 64106
(816) 412-1741

CONTENTS

<u>Section/Table</u>	<u>Page</u>
QUALITY ASSURANCE PROJECT PLAN FORM.....	1
TABLE 1: SAMPLE SUMMARY	5
TABLE 2: DATA QUALITY OBJECTIVES SUMMARY	5



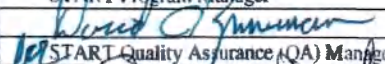
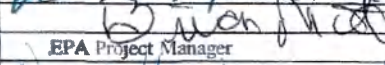
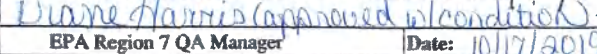
APPENDICES

Appendix

- A SITE-SPECIFIC INFORMATION REGARDING GROUNDWATER SAMPLING AT THE
DOWNTOWN WELLS SITE AND FORMER ELECTROLUX SITE
- B FIGURES
- C SITE-SPECIFIC DATA MANAGEMENT PLAN

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2017)
for the Downtown Wells Site and Former Electrolux Site

Project Information:

Site Name: Downtown Wells Site and Former Electrolux Site		Location: Jefferson	State: IA
U.S. Environmental Protection Agency (EPA) Project Manager: Brian Mitchell		Superfund Technical Assessment and Response Team (START) Project Manager: Ryan Slanczka	
Approved By:			
Title:	START Project Manager	Date:	10/10/2019
Approved By:			
Title:	START Project Manager	Date:	10/10/2019
Approved By:			
Title:	START Quality Assurance (QA) Manager	Date:	10/10/2019
Approved By:			
Title:	EPA Project Manager	Date:	10/17/19
Approved By:			
Title:	EPA Region 7 QA Manager	Date:	10/17/2019
		Prepared For:	EPA Region 7 Superfund Division
		Prepared By:	Ryan Slanczka
		Date:	October 2019
		Tetra Tech START Project Number:	X903019F0086.003

1.0 Project Management:

1.1 Distribution List

EPA—Region 7: Brian Mitchell, EPA Project Manager
Diane Harris, EPA Region 7 QA Manager

Tetra Tech START: Ryan Slanczka, Project Manager
Kathy Homer, QA Manager

1.2 Project/Task Organization

Brian Mitchell of the EPA Region 7 Superfund Division will serve as the EPA Project Manager for the activities described in this Quality Assurance Project Plan (QAPP). Ryan Slanczka of Tetra Tech, Inc. (Tetra Tech) will serve as the START Project Manager.

1.3 Problem Definition/Background:

Description: This site-specific QAPP form is prepared as an addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment (TBA) Programs (updated October 2017), and specifies site-specific data quality objectives for the sampling activities described herein.

- ☒ Description attached.
- ☐ Description in referenced report: _____
- Title _____ Date _____

1.4 Project/Task Description:

- ☒ Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Preliminary Assessment (PA)
- ☒ CERCLA Site Investigation (SI) ☐ Brownfields Assessment ☐ Removal Action
- ☐ Other (description attached): ☐ Pre-CERCLIS Site Screening ☐ Removal Site Evaluation

Other Description:

Schedule: Field activities are anticipated to occur in November 2019.

- ☐ Description in referenced report: _____
- Title _____ Date _____

1.5 Quality Objectives and Criteria for Measurement Data:

- | | |
|------------------------|---|
| a. Accuracy: | <input checked="" type="checkbox"/> Identified in attached table. |
| b. Precision: | <input checked="" type="checkbox"/> Identified in attached table. |
| c. Representativeness: | <input checked="" type="checkbox"/> Identified in attached table. |
| d. Completeness*: | <input checked="" type="checkbox"/> Identified in attached table. |
| e. Comparability: | <input checked="" type="checkbox"/> Identified in attached table. |

Other Description:

*A completeness goal of 100 percent has been established for this project. However, if the completeness goal is not met, EPA may still be able to make site decisions based on any or all of the remaining validated data. No critical samples have been identified.

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2017)
for the Downtown Wells Site and Former Electrolux Site

1.6 Special Training/Certification Requirements:

- ☒ Occupational Safety and Health Administration (OSHA) 1910
☐ Special Equipment/Instrument Operator (describe below): ☐ Other (describe below):

1.7 Documentation and Records:

- ☒ Field Sheets ☒ Site Log ☐ Trip Report ☒ Site Maps ☐ Video
☒ Chain of Custody ☒ Health and Safety Plan ☒ Letter Report ☒ Photos
- ☒ Sample documentation will follow EPA Region 7 Standard Operating Procedure (SOP) 2420.05.
☒ A copy of this QAPP and any future amendments will be available to all personnel throughout sampling activities. EPA will maintain original documents.
☒ Other: Analytical information will be handled according to procedures identified in Table 2.

2.0 Measurement and Data Acquisition:

2.1 Sampling Process Design:

- ☐ Random Sampling ☐ Transect Sampling ☒ Biased/Judgmental Sampling ☐ Stratified Random Sampling
☐ Search Sampling ☐ Systematic Grid ☐ Systematic Random Sampling ☒ Definitive Sampling
☐ Screening w/o Definitive Confirmation ☐ Screening w/ Definitive Confirmation ☐ Incremental Sampling Methodology
☒ Sample Map Attached
- ☒ Other (Provide rationale behind each sample): See Appendix A for additional sampling information.

The proposed sampling scheme will be biased/judgmental sampling with definitive laboratory analysis, in accordance with the *Guidance for Performing Site Inspections Under CERCLA*, Office of Solid Waste and Emergency Response (OSWER) Directive #9345.1-05, September 1994. Judgmental sampling is subjective (biased) selection of sampling locations based on historical information, visual inspection, and best professional judgment of sampler(s). All samples will be submitted for analysis by the EPA Region 7 laboratory. See Appendices A and B for additional site-specific information and maps. The proposed number of samples is a balance between cost and coverage, and represents a reasonable attempt to meet the study objectives while staying within the budget constraints of a typical site investigation.

Sample Summary Location	Matrix	# of Samples*	Analysis
Downtown Wells Site	Water	18	VOCs
Former Electrolux Site	Water	1	VOCs

* See Table 1 for a complete sample summary.

2.2 Sample Methods Requirements:

Matrix	Sampling Method	EPA SOP or other Method
Water	Groundwater samples will be collected at approximately 35, 45, and 65 feet below ground surface (bgs) by use of polyethylene tubing and a check valve (i.e., inertial pump method), and will be transferred to the appropriate sample containers.	EPA SOPs 4230.07 and 4231.2007
Water	Groundwater samples will be collected within a screened interval at approximately 135-145 feet bgs by application of micro-purge sampling methodology.	EPA SOPs 4232.2048, 4232.2044, and 4231.2007

2.3 Sample Handling and Custody Requirements:

- ☒ Samples will be packaged and preserved in accordance with procedures described in Region 7 EPA SOP 2420.06. If shipment of samples by commercial service is required, each cooler lid will be securely taped shut, and two custody seals will be signed, dated, and placed across the lid opening. Samples will be submitted to the laboratory in a time-efficient manner to ensure no exceedances of applicable holding times.
☒ Chain of custody (COC) will be maintained as directed by Region 7 EPA SOP 2420.04.
☐ COC will be maintained as directed by Tetra Tech SOP 019 (Revision 7), Packaging and Shipping Samples, as well as any additional contract requirements.
☒ The EPA Region 7 laboratory will accept samples according to Region 7 EPA SOP 2420.01.
☐ Other (Describe):

2.4 Analytical Methods Requirements:

- ☒ Identified in attached table.
☒ Rationale: The requested analyses have been selected based on historical information about the site and program experience with similar types of sites.
☐ Other (Describe):

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2017)
for the Downtown Wells Site and Former Electrolux Site

2.5 Quality Control Requirements

- ☐ Not Applicable
- ☒ Identified in attached table.
- ☒ In accordance with the Generic QAPP for the Superfund Site Assessment and TBA Programs (October 2017).
- ☒ Field quality control (QC) Samples: For this investigation, field QC samples will include one field duplicate, one field blank, and one equipment rinsate blank. The field duplicate will be collected to assess precision of analytical and sampling methods. The field blank will be collected to evaluate contamination of sampling containers and/or preservatives, and to assess contamination potentially introduced during sampling and laboratory procedure(s). The equipment rinsate blank will evaluate effectiveness of decontamination procedures for Geoprobe sampling equipment. In addition, one water trip blank will be prepared by the EPA Region 7 laboratory to assess contamination potentially introduced during transportation of the containers/samples.
- The blank samples will be submitted for the analyses listed in the attached tables. Evaluation of blank samples to determine whether the environmental samples are representative depends on the levels of contamination found in environmental samples. Analytical results from blank samples will be evaluated qualitatively by the EPA Project Manager and EPA contractor(s) to determine a general indication of field-introduced and/or lab-introduced contamination.
- ☐ Other (Describe):

2.6 Instrument/Equipment Testing, Inspection, and Maintenance Requirements:

- ☐ Not Applicable
- ☒ In accordance with the Generic QAPP for Superfund Site Assessment and TBA Programs (updated October 2017).
- ☒ Testing, inspection, and maintenance of analytical instrumentation will accord with the previously referenced SOPs and/or manufacturers' recommendations.

2.7 Instrument Calibration and Frequency:

- ☐ Not Applicable
- ☒ In accordance with the Generic QAPP for Superfund Site Assessment and TBA Programs (updated October 2017).
- ☒ Calibration of laboratory equipment will proceed as described in the previously referenced SOPs and/or manufacturers' recommendations.
- ☐ Other (Describe): Calibration checks of field instruments will occur daily, as specified in the manufacturers' recommendations.

2.8 Inspection/Acceptance Requirements for Supplies and Consumables:

- ☐ Not Applicable
- ☒ In accordance with the Generic QAPP for Superfund Site Assessment and TBA Programs (updated October 2017).
- ☒ All sample containers will meet EPA criteria for cleaning procedures for low-level chemical analysis. The manufacturer will provide sample containers with Level II certifications in accordance with pre-cleaning criteria established by EPA in *Specifications and Guidelines for Obtaining Contaminant-Free Containers*.
- ☐ Other (Describe):

2.9 Data Acquisition Requirements:

- ☐ Not Applicable
- ☒ In accordance with the Generic QAPP for Superfund Site Assessment and TBA Programs (updated October 2017).
- ☒ EPA and/or its contractor(s) have compiled from other sources data or information pertaining to the site (including other analytical data, reports, photos, maps, etc., that are referenced in this QAPP). Some of those data have not been verified by EPA and/or its contractor(s); however, EPA will not use that unverified information for decision-making purposes without verification by an independent professional qualified to verify such data or information.
- ☐ Other (Describe):

2.10 Data Management:

- ☒ The EPA Region 7 laboratory will manage all data acquired there in accordance with Region 7 EPA SOP 2410.01.
- ☐ Other (Describe): The START-subcontracted laboratory will manage all data acquired there in accordance with the laboratory's established procedures.
- ☒ All data will be managed in accordance with the site-specific data management plan in Appendix C to this document.

Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2017)
for the Downtown Wells Site and Former Electrolux Site

3.0 Assessment and Oversight:

3.1 Assessment and Response Actions:

- ☒ Peer Review ☒ Management Review ☐ Field Audit ☐ Lab Audit
☒ Assessment and response actions pertaining to analytical phases of the project associated with the EPA Region 7 laboratory are addressed in Region 7 EPA SOPs 2430.06, 2430.14, and 2430.16.
☐ Other (Describe):

3.1A Corrective Action:

- ☒ Corrective actions will be at the discretion of the EPA Project Manager whenever problems appear that could adversely affect data quality and/or resulting decisions affecting future response actions pertaining to the site.
☐ Other (Describe):

3.2 Reports to Management:

- ☐ Audit Report ☐ Data Validation Report ☐ Project Status Report ☐ None Required
☒ START will prepare and submit to EPA a letter report describing sampling techniques, locations, problems encountered (with resolutions to those problems), and interpretation of analytical results.
☒ Preparation of reports will accord with the Generic QAPP for Superfund Site Assessment and TBA Programs (updated October 2017).
☐ Other (Describe):

4.0 Data Validation and Usability:

4.1 Data Review, Validation, and Verification Requirements:

- ☐ Identified in attached table.
☒ Data review and verification will accord with the Generic QAPP for Superfund Site Assessment and TBA Programs (updated October 2017).
☒ A qualified analyst and the EPA Region 7 laboratory's Section Manager will conduct data review and verification of analytical results generated by that laboratory, as described in Region 7 EPA SOPs 2430.12 and 2410.10.
☐ Other (Describe):

4.2 Validation and Verification Methods:

- ☐ Identified in attached table.
☒ Validation of data generated by the EPA Region 7 laboratory will accord with Region 7 EPA SOPs 2430.12 and 2410.10.
☒ The EPA Project Manager will inspect the data to provide a final review. The EPA Project Manager will review the data, if applicable, for laboratory spikes and duplicates, laboratory blanks, and field duplicates to ensure the data are acceptable. The EPA Project Manager will also compare the sample descriptions with field sheets for consistency, and will ensure appropriate documentation of any anomalies in the data.
☐ Other (Describe):

4.3 Reconciliation with User Requirements:

- ☐ Identified in attached table.
☒ If data quality indicators do not meet the project's requirements as outlined in this QAPP, the data may be discarded, and re-sampling or re-analysis of the subject samples may be required by the EPA Project Manager.
☐ Other (Describe):

Region 7 Superfund Program Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2017) for the Downtown Wells Site and Former Electrolux Site							
Table 1: Sample Summary							
Site Name: Downtown Wells Site and Former Electrolux Site				Location : Jefferson, Iowa			
START Project Manager: Ryan Slanczka				Activity/ASR #: To be determined		Date: October 2019	
No. of Samples	Matrix	Location	Purpose	Depth or other Descriptor	Requested Analysis	Sampling Methods	Analytical Method
18	Water	Temporary Wells	To assess contaminant concentrations in groundwater	Samples will be collected at approximately 35, 45, and 65 feet bgs	VOC	EPA SOPs 4230.07 and 3230.13	SOP 3230.13 (low level)
1	Water	Monitoring well	To assess contaminant concentrations in the Pleistocene sand and gravel complex	Samples will be collected within screened intervals – approximately 135-145 feet bgs	VOC	EPA SOPs 4232.2048, 4232.2044, and 4231.2007	SOP 3230.13 (low level)
QC Samples							
Duplicates							
1	Water	Not applicable (NA)	Field Duplicate – To assess precision of analytical and sampling methods	Not applicable	VOCs	EPA SOPs 4232.2048, 4232.2044, 4231.2007, 4230.07, and 3230.13	SOP 3230.13 (low level)
Blanks							
1	Water	NA	Field blank – to assess field-introduced and lab-introduced contamination	NA	VOCs	EPA SOPs 4232.2048, 4232.2044, 4231.2007, 4230.07, and 3230.13	SOP 3230.13 (low level)
1	Water	NA	Trip blank – to assess transportation-related contamination	NA	VOCs	EPA SOPs 4232.2048, 4232.2044, 4231.2007, 4230.07, and 3230.13	SOP 3230.13 (low level)
1	Water	NA	Rinsate blank – to assess efficiency of decontamination procedures	NA	VOCs	EPA SOPs 4232.2048, 4232.2044, 4231.2007, 4230.07, and 3230.13	SOP 3230.13 (low level)

Region 7 Superfund Program Addendum to the Generic QAPP for Superfund Site Assessment and Targeted Brownfields Assessment Programs (updated October 2017) for the Downtown Wells Site and Former Electrolux Site								
Table 2: Data Quality Objectives Summary								
Site Name: Downtown Wells Site and Former Electrolux Site					Location: Jefferson, Iowa			
START Project Manager: Ryan Slanczka					Activity/ASR #: To be determined			Date: October 2019
Analysis	Analytical Method	Data Quality Measurements					Sample Handling Procedures	Data Management Procedures
		Accuracy	Precision	Representativeness	Completeness	Comparability		
Water Samples								
VOCs	See Table 1	Per analytical method	Per analytical method	Judgmental sampling based on professional judgment of the sampling team	100%; No specific critical samples have been identified.	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form

APPENDIX A

SITE-SPECIFIC INFORMATION REGARDING GROUNDWATER SAMPLING AT THE DOWNTOWN WELLS SITE AND FORMER ELECTROLUX SITE

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division tasked the Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START), under contract number 68HE0719D0001, Task Order 19F0086.003, to conduct a Preliminary Assessment of the Downtown Wells Site and a Site Investigation of the Former Electrolux Site in Jefferson, Iowa.

Tasks for START will include installing one permanent monitoring well, as well as conducting groundwater sampling at the Downtown Wells Site and Former Electrolux Site in Jefferson, Iowa. This Quality Assurance Project Plan (QAPP) identifies site-specific features and addresses elements of the sampling strategy and analytical methods proposed for the investigation. Ryan Slanczka is the START Project Manager (PM) for this activity. Brian Mitchell is the EPA Project Manager and task monitor.

SITE BACKGROUND INFORMATION

Information regarding site location and description, and operational and investigative history is as follows:

Site Location/Description

The former Electrolux facility is at 601 East Central Avenue in Jefferson, Greene County, Iowa. The facility lies within the southeast quarter of Section 5, Township 83 North, Range 30 West (see Figure 1, Appendix B). The facility occupies approximately 7.5 acres of an approximately 20.75-acre parcel zoned for industrial use (Greene County 2016).

The Jefferson public water supply is sourced from six groundwater wells in the Pleistocene sand gravel complex at approximately 150 feet bgs. The Downtown Wells Site is considered to be the 10-year capture zone of Jefferson municipal wells 4, 6, and 9.

Site Operational and Investigative History

The approximately 21-acre Electrolux property formerly included a 75,500-square-foot facility that manufactured dishwasher motor transmissions from 1960 until decommissioned in March 2011. The former manufacturing building was demolished, and the facility now includes a 7.5-acre area of concrete building slabs, parking lots, fencing, and sidewalks where manufacturing activities previously occurred. In 2010, Electrolux began to evaluate potential subsurface contamination derived from manufacturing activities. A phased site assessment approach was followed from 2010 through 2013 to assess facility

subsurface conditions downgradient of and in areas exterior to the former manufacturing facility. Additional groundwater monitoring was conducted in 2014, and a Site Assessment and Summary Report that included a conceptual site model was completed in October 2016 (Golder Associates, Inc. [Golder] 2016).

Results from the site assessments indicate that soil and groundwater at the facility are contaminated with chlorinated volatile organic compounds (CVOC), primarily trichloroethene (TCE) and its breakdown constituents within the upper tills (identified within 0 to 40 feet below ground surface [bgs]).

CVOC-impacted soils were found only within the footprint of the former facility and adjacent landscaped areas within 1 to 7 feet bgs. Highest concentrations of CVOC contaminants in groundwater were detected in the yellow brown till within approximately 30 to 40 feet bgs near the southeast portion of the former facility. The October 2016 Site Assessment report concluded that natural attenuation and chlorinated degradation were occurring at the facility, and that the extent of contamination was within Electrolux property boundaries. Sources of volatile organic compound (VOC) contamination at the facility are believed to be former manufacturing operations within the eastern portion of the facility (Golder 2016).

An investigation completed in April 2017 included collection of groundwater samples by use of a direct-push technology (DPT) drilling rig. Four groundwater samples were collected at 30- and 50-foot depths at two temporary wells downgradient (south) of the former facility. The sampling apparatus was unable to reach the two planned lower target collection depths of 120 and 150 feet bgs, encountering clay refusal at approximately 77 feet bgs. No VOC was detected in any sample collected during the sampling event (Toeroek 2017).

An additional investigation completed in May 2018 included installation of two permanent monitoring wells downgradient of the former facility. Monitoring wells were installed to depths of 98 feet bgs (MW-1) and 133 feet bgs (MW-2) by use of sonic rotary technology. The wells were screened from 88 to 98 feet bgs (MW-1) and 123 to 133 feet bgs (MW-2), and groundwater samples were collected by use of low-flow QED Micropurge equipment. Facility-related VOCs were not detected in any sample collected during the sampling event; however, minor amounts of chloroform were detected below its maximum contaminant level (MCL) (Toeroek 2018).

Groundwater in the following City of Jefferson, Iowa municipal drinking water wells was found to contain *cis*-1,2-dichloroethene (DCE): Well 4 (~150 feet total depth, 30 feet of screen from 120 to 150 feet bgs), Well 6 (160 feet total depth, 15 feet of screen from ~142 to 157 feet bgs), and Well 9 (159 feet total depth, screen depth unknown). Documents obtained from the Jefferson Water Department Source

Water Protection Plan indicate that the southwest portion of the former facility is within the 10-year capture zone of four of the Jefferson supply wells (Iowa Department of Natural Resources [IDNR] 2019).

SAMPLING STRATEGY AND METHODOLOGY

EPA tasked Tetra Tech to install one permanent monitoring well and to sample at the Former Electrolux Site; and to install six permanent monitoring wells and to sample at the Downtown Wells Site in Jefferson, Iowa. The purpose of the sampling investigation is to determine the presence or absence of contaminants at the EPA Region 7 laboratory's achievable reporting/detection limits. Primary components of the sampling investigation are as follows:

- Collect groundwater samples from six direct-push technology (DPT) borings. Samples will be collected at approximate depths of 35, 45, and 65 feet bgs by use of polyethylene tubing and a check valve (i.e., inertial pump method). Collected samples will be analyzed for VOCs.
- Obtain and document Global Positioning System (GPS) coordinates at all sample locations.
- Install and develop one permanent monitoring well to 200 feet bgs in accordance with EPA Guidance titled *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells* (EPA 1991). The screened intervals will be located within the Pleistocene sand gravel complex, and will be determined by the onsite Tetra Tech geologist, in collaboration with the EPA project manager and onsite IDNR personnel.
- Collect one groundwater sample from the well by application of micro-purge ("low-flow") sampling methodology.
- Survey the well to determine accurate GPS coordinates, as well as the elevation of the ground surface and top of casing in feet above mean sea level (AMSL).

Activities associated with these tasks are described in the following subsections and in the site-specific QAPP Addendum. Activities during the facility visit will be recorded in a dedicated field logbook and photographically. Any necessary deviations from the work plan will be discussed with the EPA Project Manager and documented in the field log book.

MOBILIZATION AND DEMOBILIZATION

Tetra Tech will perform the following mobilization and demobilization activities associated with the sampling investigation: coordinating with the well drilling subcontractors, ordering and returning field equipment, assembling sample supplies, shipping/delivering samples to the EPA Region 7 laboratory, and coordinating with the survey subcontractor.

Because the EPA Project Manager has directed Tetra Tech to install the DPT temporary wells within city street right-of-way's, Tetra Tech will discuss access arrangements in advance with City of Jefferson officials.

Tetra Tech will obtain sampling supplies such as sample containers, labels, and preservatives from the EPA Region 7 laboratory prior to the sampling visit. Following the sampling visit, the Tetra Tech will deliver the samples to the laboratory via overnight courier or by hand delivery.

DPT Groundwater Sampling

Tetra Tech will collect 18 groundwater samples from temporary monitoring wells at the Downtown Wells Site. Temporary monitoring well locations were selected within the 10-year capture zone of the contaminated municipal wells, at the six sites most likely to have contributed to the contamination of the municipal wells. These six sites were determined based on historical review of facilities' environmental interests within the EPA's Federal Registry Service. Sampling locations within city street right-of-way's may be modified, based on existing field conditions; tentative sampling locations are shown on Figure 2, Appendix B.

Groundwater samples will be collected at approximately 35, 45, and 65 feet bgs at each sampling location. Assumedly, groundwater will be available at all sample depths; however, if sufficient water for sample collection is not encountered following screening at the desired depth, the screen will be raised 5 feet and checked for presence of water. Tetra Tech will adjust sampling depths according to measured static water levels (SWL). Collection of all groundwater samples will accord with Region 7 EPA Standard Operating Procedure (SOP) 4230.07 (*Geoprobe Operation*) and SOP 4231.2007 (*Groundwater Well Sampling*). At each location, a 4-foot-long, stainless steel, slotted screen encased in an outer sleeve will be pushed to the desired sample collection depth. This sleeve surrounding the screen then will be pulled up to expose the screen, allowing formation water to enter. A water level indicator will be extended into the temporary well to measure depth to groundwater. If groundwater is present, a sample will be collected through polyethylene tubing fitted with a check valve placed at the bottom of the tubing, which will be inserted into the DPT rod string. The rod string will then be raised for sample collection at the next desired (shallower) interval. Sample intervals will generally be 15 feet apart. At each sample interval, approximately 1 gallon of groundwater will be purged by use of polyethylene tubing fitted with a check valve prior to sample collection.

Samples will be analyzed only for VOCs, and will be collected in three 40-milliliter vials preserved with hydrochloric acid (HCl). Samples will be collected in laboratory-prepared sample containers, labeled,

and placed in an ice-filled cooler kept at temperatures between 2 and 6 degrees Celsius (°C). Samples will be properly documented on the chain of custody, packaged, and delivered to the EPA Region 7 laboratory in Kansas City, Kansas. The groundwater sampler and rods will be decontaminated following sampling at each location, and new tubing will be used at each location. After completion of sampling, each DPT borehole will be plugged with bentonite from the bottom of hole to ground surface.

WELL DRILLING

The proposed monitoring well will be completed in the Pleistocene sand and gravel complex. The proposed monitoring well location was selected in collaboration with the EPA project manager, near the former Electrolux facility, where it was determined that a potential groundwater pathway connecting the former Electrolux facility to the contaminated municipal wells, and through which contamination originating at the former facility would disperse, would be most likely to exist. The proposed monitoring well location is shown on Figure 3, Appendix B. The borehole for the monitoring well will be completed via a roto-sonic drilling method that will allow collection of a continuous core. The continuous core will be extruded into a polyethylene sleeve in 10-foot intervals for logging. The top, bottom, and depths will be marked on the plastic.

WELL DESIGN AND INSTALLATION

The proposed monitoring well will be constructed in accordance with EPA Guidance titled *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells* (EPA 1991), as well as any State of Iowa requirements and specifications as outlined in the following sections.

Well Riser

Well risers for the monitoring well will consist of 2-inch-diameter, Schedule 40, polyvinyl chloride (PVC). Threaded joint couplings, to form watertight unions, will join riser sections. Adhesives or solvents will not be used to join the casing sections. Use of Teflon tape on threaded joints is acceptable and will be noted on the well construction log. Each riser section will be kept in its factory wrapping and off the ground until installed in the borehole.

Well Screen

The well screen will be a 10-foot length with 0.010-inch slot size, and constructed of the same size and strength material as the well risers. The bottom of the screen will be equipped with a 0.25- or 0.5-foot PVC end cap. Field slotted screen is not permitted.

Well Completions

Per request from EPA, the monitoring well will be a flush mounted completion as described below.

The well will be protected from entry of foreign materials at all times, and upon completion, the well will be secured with a protective well vault installed around the well casing that will have been cut off about 0.3 foot below grade. This vault will be set into the cement surface before it cures, with the vault lid flush with the surrounding well pad or concrete sidewalk/parking lot. To ensure a watertight seal, use of expanding cement that bonds tightly to the vault is required. In addition, a flexible o-ring gasket will be installed between the vault and vault lid. Drainage will be directed away from wells completed in areas where significant runoff may occur. Well vaults in traffic areas must be rated for car and truck traffic.

Locks

To prevent theft or tampering with the monitoring wells, a lock will be installed on the well cap. A copy of the key to access the lock will be maintained by Tetra Tech.

Well Pad

The proposed monitoring well will be installed along city or county right-of-way's, which may include sidewalks, streets, alleys, or maintained easements. If the well is placed in a street or sidewalk, concrete will be placed around the upper portion of casing, and the well vault will be finished to match the surrounding grade of the sidewalk or road.

Concrete pads will be required for any wells installed in unpaved areas. These pads will be a minimum of 2.5 feet by 2.5 feet square by 8 inches thick (at borehole), and sloped away from the well with the top outer edge meeting ground level elevation. Circular well pads with diameter of about 2.5 feet may be installed instead of square pads where appropriate. Well pads within City streets or alleys will have 6-8 inches of concrete as needed to match thickness of pavement and withstand traffic.

Well Identification

A permanent corrosion-resistant tag will be affixed to the well cap or to the inside of the well vault or vault lid. The tag will clearly identify the well number, depth, screened interval, and date of installation. The well will also be clearly identified as a groundwater monitoring well.

Filter Pack

The annular space around the well screen will be backfilled with clean, washed, well-rounded silica sand sized to perform as a filter between the formation material and the well screen. The filter pack material will be placed in such a manner as to avoid bridging and to ensure a continuous filter pack throughout the screened interval of the well. The filter pack will extend approximately 1 foot below and 2 to 4 feet above the well screen.

Grain size of the filter pack material is expected to be a 10/20 or 12/20 mesh sand.

Bentonite Seal

A minimum 3-foot-thick bentonite seal will be gravity fed into place in the annular space above the well screen and filter pack sand. The seal will be composed of commercially manufactured sodium bentonite pellets or granules. Bentonite pellets will not exceed 0.5-inch diameter. The bentonite pellet seal will be allowed to hydrate a minimum of 2 hours before grouting begins. If the bentonite seal is positioned above the water table, granular bentonite will be installed in 1-foot lifts with each lift hydrated a minimum of 20 minutes before the next lift is placed. Clean, potable water will be added to hydrate the bentonite. After placement of the final lift, the granular bentonite seal will be allowed to hydrate an additional 2 hours before grouting begins. Time-release bentonite pellets may be used for seals placed within the saturated zone.

Annular Seal

Only state-approved grouts may be used, and grout placement must accord with applicable state regulations. Cement or bentonite grout will be placed above the bentonite seal to the ground surface. Cement grout will consist of a mixture of Portland cement (ASTM C 150) and water in the proportion of not more than 7 gallons of approved water per bag of cement (94 pounds). Additionally, 3 percent by weight of sodium bentonite powder will be added unless prohibited by state or local regulations. Grout will be placed by pumping through a side-discharging tremie pipe with the lower end of the tremie pipe within 3 feet of the top of the bentonite seal. Pumping will continue until undiluted grout flows from the boring at ground surface. Commercially available bentonite grout products approved by the State may also be used.

Temporary Capping

Any well to be temporarily removed from service or left incomplete due to delays in construction will be capped with a watertight cap and equipped with a “vandal proof” cover that satisfies applicable state or local regulations.

WELL DEVELOPMENT

Within 1 week after construction of the well, but no sooner than 24 hours after completion of grouting, well development will be completed without use of dispersing agents or acids. Objectives of well development are to: (1) assure that groundwater enters the well screen freely, thus yielding a representative groundwater sample and an accurate water level measurement; (2) remove all water that may have been introduced during drilling and well installation; and (3) remove very fine-grained sediment in the filter pack and nearby formation so that groundwater samples are not highly turbid and silting of the well does not occur.

Development will consist of mechanical surging (with a pump, bailer, or surge block) and pumping for about 2 hours at the well. Typically, the well is surged for about 10 minutes at different depths within the interval screened and then pumped until the water becomes clear. This process of pumping and surging is repeated about four or five times at each well to remove sediment entering the well. At the end of that time, the well will be continuously pumped for a minimum of 15 minutes by use of an electric submersible pump. Temperature, pH, specific conductivity, and turbidity will be monitored by Tetra Tech during this pumping. Pumping will continue until these parameters will have stabilized (less than 0.2 pH units or a 10 percent change in all other parameters among three consecutive readings), and the water is clear and free of fines. Development water will be collected and transferred into 55-gallon drums. All drums will be labelled and kept on site for sampling and disposal.

WELL SURVEYING

The monitoring well will be surveyed by an Iowa licensed surveying contractor. The survey will include measurement of accurate GPS coordinates at the well, and of the control point used in the survey. In addition to the coordinates, elevations of the ground surface and top of casing will be recorded at in feet AMSL, and will be accurate to 0.01 foot. A copy of the survey report will be included in the final report.

WELL SAMPLING

Sample collection from the monitoring wells will proceed by application of micro-purge (“low-flow”) sampling methodology. This consists of purging groundwater directly from the screened portion of the well at a very low flow rate (less than [$<$] 200 milliliters per minute [mL/min]). Samples from monitoring wells will be collected via a QED sample Pro 1.75-inch Bladder Pump (or similar), through bonded 0.25-inch low density polyethylene (LDPE) tubing and through a Horiba U-50 (or similar) multi-parameter water quality meter. The water quality meter will provide measurements of water quality parameters such as temperature, pH, conductivity, dissolved oxygen, and turbidity. Water quality parameters will be recorded at regular intervals (approximately 4 minutes) until the parameters will have stabilized. Stabilization is accomplished when respective water quality parameters measured at terminations of three consecutive time intervals (e.g., three measurements of dissolved oxygen) are within 10 percent.

Samples will be analyzed only for VOCs, and will be collected in three 40-ml vials preserved with HCl. Samples will be collected in laboratory-prepared sample containers, labeled, and placed in an ice-filled cooler kept at temperatures between 2 and 6 degrees °C. Samples will be properly documented on the chain of custody, packaged, and delivered to the EPA Region 7 laboratory in Kansas City, Kansas.

QUALITY CONTROL SAMPLING

QC samples to be collected during the sampling investigation include a groundwater field duplicate sample, one water field blank, one trip blank, and one rinsate blank.

The field duplicate sample will be collected to assess precision of field sample collection and laboratory analysis procedures. The field duplicate sample will be collocated with an original sample. The EPA Region 7 laboratory will analyze the field duplicate sample applying the same method and for the same analytes as the collocated original sample.

Field blanks are collected as an indication of overall precision. Field blank samples are collected at a frequency of one per sampling event. The EPA Region 7 laboratory will analyze the field blank applying the same methods and for the same analytes as the original samples. Additionally, one trip blank will be prepared by the EPA Region 7 laboratory to determine whether contamination will have been introduced during transportation of the containers/samples. The trip blank sample will be analyzed for VOCs.

One rinsate blank will be collected to evaluate the effectiveness of decontamination procedures for sampling equipment.

All QC samples will be preserved with HCl, collected in laboratory-prepared sample containers, labeled, and placed in an ice-filled cooler kept at temperatures between 2 and 6 degrees °C. Samples will be properly documented on the chain of custody, packaged, and delivered to the EPA Region 7 laboratory in Kansas City, Kansas.

DECONTAMINATION

All drilling equipment, surface and downhole, including drill pipe and drive casing, tanks, etc., will be high-pressure spray washed prior to first use, prior to mobilization to each new borehole, and prior to mobilization from the facility after installation of the final well. The drill rig will be decontaminated after completion of drilling, or as needed, per discretion of the Tetra Tech site manager.

A temporary decontamination space will be constructed at the facility. This space will be capable of containing all fluids produced during decontamination and steam cleaning of drilling and sampling equipment. Upon completion of decontamination activities, or on a periodic basis as necessary, decontamination fluids will be pumped from the temporary containment into portable tanks or drums and disposed of by drilling subcontractors as per the subcontractor's scope of work.

Tetra Tech will decontaminate non-disposable field equipment, such as tubing, after completion of sampling at each sample location. Decontamination will consist of thoroughly scrubbing the equipment with a non-phosphate detergent solution, and rinsing the equipment with potable water or high-pressure spray washing.

INVESTIGATION-DERIVED WASTE

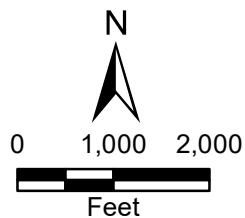
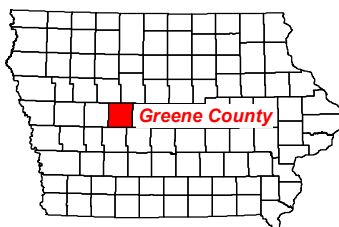
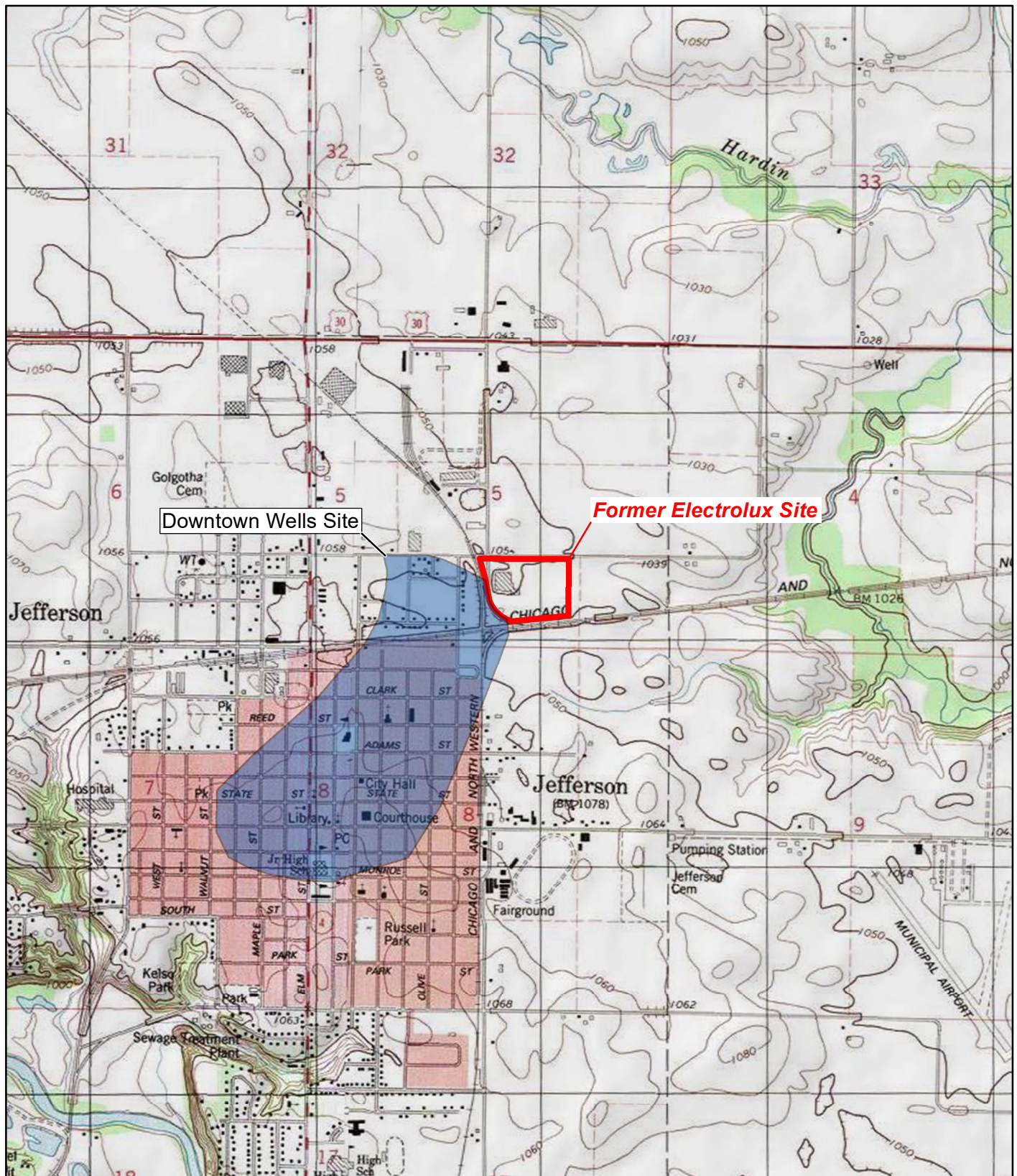
Investigation-derived waste will include drill cuttings, development water, and decontamination fluids generated during the well installation/development activities. Drill cuttings will be collected in clean 55-gallon drums or similar containers that can be properly sealed and labeled. Development water and decontamination fluids will be containerized for transport and disposal. All investigation-derived wastes will be disposed of by drilling subcontractors as per the subcontractor's scope of work.

REFERENCES

- Golder Associates, Inc. (Golder). 2016. Site Assessment Summary Report, Former Electrolux Home Products, Inc. Facility, Jefferson, Iowa. October 2019.
- Greene County, Iowa Assessor's Office. 2016. Online Parcel Report. Accessed September 2019. <http://greeneia.mygisonline.com/>
- Iowa Department of Natural Resources (IDNR). 2013. Jefferson Groundwater Investigation, Green County, Iowa, Iowa Geological and Water Survey, Technical Information Series 56, December 2013. September 30.
- Tetra Tech, Inc. (Tetra Tech). 2019. Personal communication regarding Jefferson supply wells. From Brian Mitchell, U.S. Environmental Protection Agency (EPA) Region 7. To Tetra Tech. September 2019.
- Toeroek. 2017. Groundwater Sampling Event – Final Report of Findings, Rev. 01 – Former Electrolux, Inc. Facility, Jefferson, Iowa. September 30.
- Toeroek. 2018. Monitoring Well Installation and Groundwater Sampling Event – Final Report of Findings - Former Electrolux, Inc. Facility, Jefferson, Iowa. September 30.
- U.S. Environmental Protection Agency (EPA). 1991. *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells*. EPA1600014-891034. Environmental Monitoring Systems Laboratory – Office of Research and Development. Las Vegas, Nevada.
- U.S. Geological Survey (USGS). 1986. Jefferson East, Iowa Quadrangle. 7.5-Minute Topographic Series.

APPENDIX B

FIGURES



Downtown Wells Site
and Former Electrolux Site
Jefferson, Iowa

Figure 1
Site Location Map



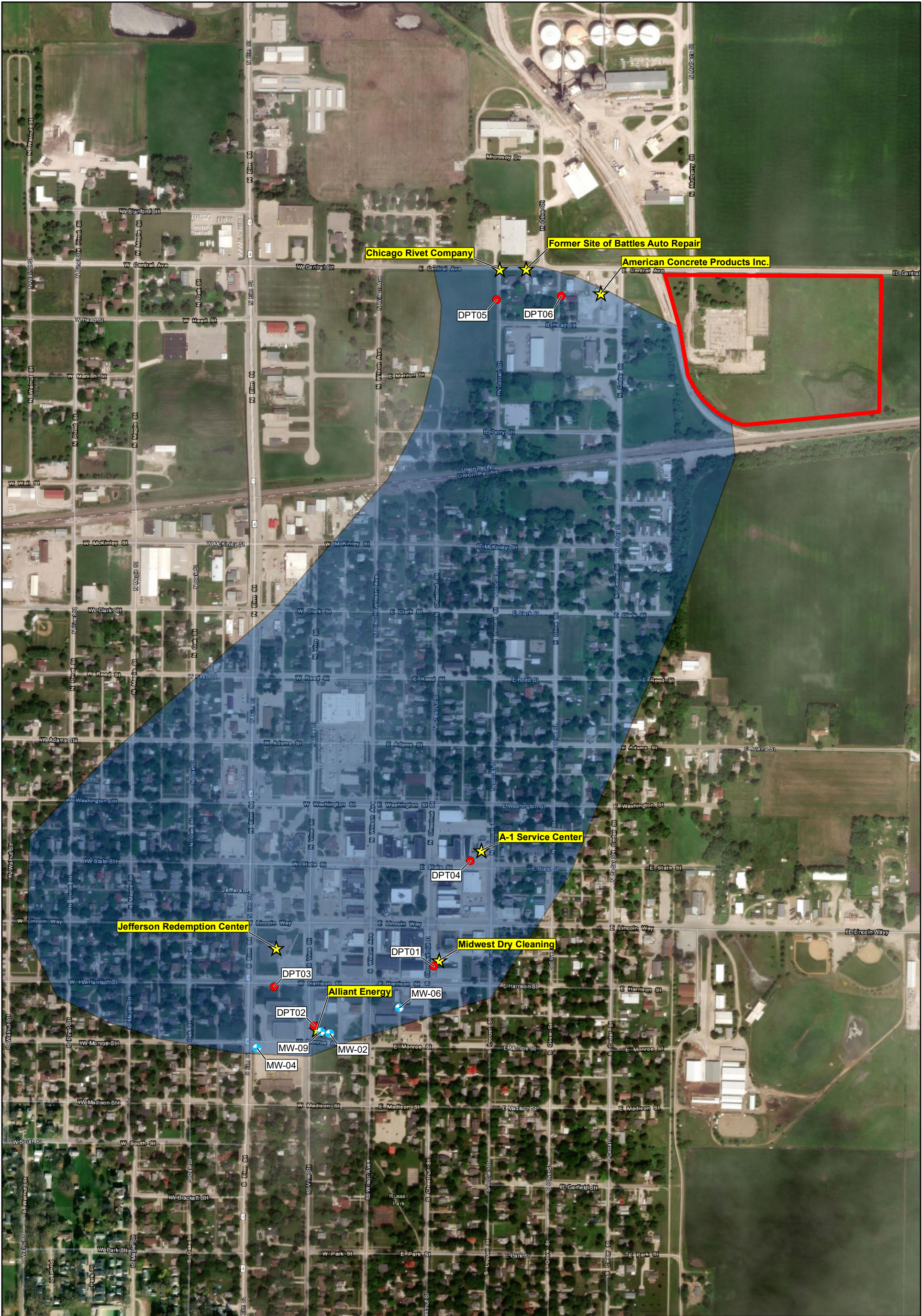
Source: Jefferson West, Iowa USGS 7.5 Minute Topo Quad, 1986;
Jefferson East, Iowa USGS 7.5 Minute Topo Quad, 1986.

Date: 10/1/2019

Drawn By: Rose Mcke

Project No: X003019F0086.003

X:\G03010086\003\Project\med\Figure1_101019.mxd

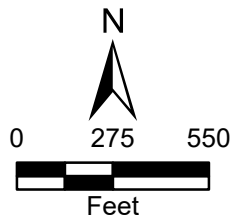


Legend

- Jefferson downtown municipal well location
- Potential responsible party location
- Proposed DPT boring location
- Former Electrolux site
- Downtown wells site

DPT Direct push technology

Source: Esri, ArcGIS Online, World Imagery, 2018.







Downtown Wells Site
and Former Electrolux Site
Jefferson, Iowa

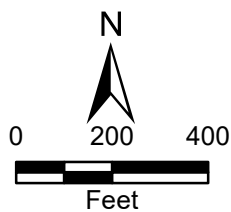
Figure 2
Proposed DPT Boring Location Map





Legend

-  Monitoring well location
-  Proposed new monitoring well location
-  Former Electrolux site
-  Former manufacturing area



Downtown Wells Site
and Former Electrolux Site
Jefferson, Iowa

Figure 3 Monitoring Well Location Map



Source: Esri, ArcGIS Online, World Imagery, 2018.

Date: 10/1/2019


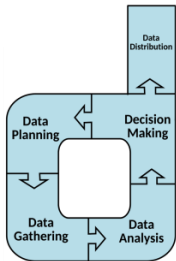
Drawn By: Rose Micke

Project No: X903019F0086.003

X:\G903019F0086\003\Project\mxd\Figure3_Mon_Well_Loc_Map.mxd

APPENDIX C

SITE-SPECIFIC DATA MANAGEMENT PLAN

		EPA Site-Specific Data Management Plan			
		Site Name:	Downtown Wells Site and Former Electrolux Site	Site ID:	IAD047055140 (EPA ID Number)
		Author:	Ryan Slanczka	Affiliation:	EPA Region 7
		Date Initiated:	9/30/19	Last Updated:	10/9/19
		Website:			

This site-specific data management plan (SSDMP) is intended to provide guidance for data collection, storage, analysis, and distribution. The data collection and management practices identified in this plan are designed to ensure data integrity and consistency throughout the project. The SSDMP should be used in conjunction with the Region 7 Regional Data Management Plan. The SSDMP is not intended to be all encompassing regarding data management. Additionally, this document is intended to be updated as data management practices change; therefore, revisions of this plan are expected during a project.

Data Planning

Data Quality Objective	Data Stream(s)
Document concentrations of contaminants in groundwater via lab analysis	Analytical Data

Data Planning – Site Contact List

Name (Affiliation)	Role	Email	Phone Number
Brian Mitchell	EPA Project Manager	mitchell.brian@epa.gov	913-551-7633
Clayton Hayes	START Data Manager	clayton.hayes@tetrattech.com	816-412-1933
	Public Information Officer (PIO)		
	Community Involvement Coordinator		
Ryan Slanczka	START Team Contact	ryan.slanczka@tetrattech.com	816-412-1770
Clayton Hayes	START GIS Team Contact	clayton.hayes@tetrattech.com	816-412-1933
	State Agency Contact		
	Local Agency Contact		

Data Gathering – Collection

Data Stream	Collection Tool	Specifications	Instructions	Repository
Documents / Files	Email/Scan	Form name, User	Copy pdf versions of documents to repository	Response.EPA.gov / SEMS
Sampling Data	Field Logbook/Field Sheet	SampleID, LocationID	Attach to report and enter into Scribe	Scribe / SEMS
Analytical Data	Scribe	SampleID, Result, Analyte	Transfer EDD info from laboratory to Scribe	Scribe / SEMS
Spatial Data	GIS	Lat/Long	Record coordinates by use of handheld device (EPA R7 SOP 2341.01)	ER Cloud

Data Gathering – Quality Assurance/Quality Control

Data Stream	QA/QC Method	Frequency	Responsibility
Documents / Files	Technical/Editorial Review	Prior to storage deposit	START PM
Contacts	Technical/Editorial Review	As needed	START PM
Sampling Data	Technical Review	Prior to storage deposit	START Data Manager
Analytical Data	Technical Review	Prior to storage deposit	START Data Manager
Spatial Data	Technical Review	Prior to storage deposit	START GIS Team

Data Gathering – Storage

Repository	Instructions	Frequency	Responsibility	Access Details
Response.EPA.gov	Website created by EPA	Created at initiation of project – planning phase	EPA PM	https://response.epa.gov/site/site_profile.aspx?site_id=14339
Scribe	Scribe project created at direction of OSC and Data Manager	At beginning of project – prior to data collection	START Data Manager	Scribe Project # (to be determined)
ER Cloud	Store operational data on the ER Cloud in accordance with EPA requirements	Throughout project	START Data Manager	ER Cloud secured access
SEMS	Archive project-related documents in accordance with EPA requirements	At conclusion of project	EPA R7	https://www.epa.gov/enviro/sems-search

Data Analysis – Decision Making

Analysis Task	Method	Data Storage Source	Frequency	Responsibility	Deliverable
Sample results evaluation	Database evaluation	Project geodatabase, Scribe	As directed by EPA PM	EPA PM / START PM	Lab results included with data summary report

Data Distribution

Deliverable	Audience	Review	Approve	Release Method
Data summary report	EPA / IDNR / Public	EPA PM / PIO	EPA PM	Response.EPA.gov / FOIA Request